

# Unit 3 – ICD20 – Ifs, Boolean Expressions, Text & Functions

Sample Test – October 31, 2025

Name: Gorski

| Total | Knowledge  | Communication  | Thinking  | Application  |
|-------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
|       |                                                                                             |                                                                                                 |                                                                                              |                                                                                                 |
| (100) | (33)                                                                                        | (28)                                                                                            | (16)                                                                                         | (23)                                                                                            |

## Communication

1. What title comments should appear at the top of your Angry Birds program?

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//Name: Amanda Gorski //Date: Oct 31, 2025 //Title: Angry Birds

2. Identify the following regarding the function shown.

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```
function pH () {
  if (reading < 7)
    setText("output", "acid");
  else if (reading == 7)
    setText("output", "neutral");
  else
    setText("output", "base");
}
```

|                                   |                       |
|-----------------------------------|-----------------------|
| (a) Function Name                 | <u>pH</u>             |
| (b) Widget Name                   | <u>output</u>         |
| (c) A Boolean Expression          | <u>reading &lt; 7</u> |
| (d) Number of Boolean Expressions | <u>2</u>              |
| (e) How to call the Function      | <u>pH();</u>          |

3. Identify the name of the first AI to master each of the following.

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| Jeopardy      | Go              | Video Generation | Chess            | Writing         | Driving        |
|---------------|-----------------|------------------|------------------|-----------------|----------------|
| <u>Watson</u> | <u>Alpha Go</u> | <u>Sora</u>      | <u>Deep Blue</u> | <u>Chat GPT</u> | <u>Stanley</u> |

4. Fill in the term that matches the descriptions given.

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|                   |                                                                   |
|-------------------|-------------------------------------------------------------------|
| <u>Comments</u>   | a) Code that doesn't run.                                         |
| <u>18</u>         | b) Moore states that hardware doubles in power every ____ months. |
| <u>Node</u>       | c) Edge or Node: Represented by a function in a program.          |
| <u>Edge</u>       | d) Edge or Node: Represented by a function call in a program.     |
| <u>&amp;&amp;</u> | e) The JavaScript symbol for "and".                               |
| <u>element</u>    | f) The name for a space holding a char at a specific index.       |
| <u>2045</u>       | g) The year of the singularity, according to Kurzweil and Vinge.  |
| <u>function</u>   | h) A subprogram.                                                  |

5. Fill in the blanks to make 5 different points for different OSSLT paragraphs:

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substring is a **useful** text function because it can divide text.

Alpha Go is an **innovative** form of AI because it is self-learning.

**If statements** are **useful** in programming because they make decisions.

**Functions** are **useful** in programming because they represent places in the code.

**Binary trees** are **useful** in AI development because they enable depth-first-search.

6. Evaluate:

- T ☒ F a) !T  
☒ T F b) !F  
☒ T F c) T && T  
T ☒ F d) T && F  
☒ T F e) T || F  
T ☒ F f) F || F

7. If x is 5, evaluate.

- ☒ T F a) x > 3  
☒ T F b) x == 5  
☒ T F c) x != 6  
T ☒ F d) x != 5  
☒ T F e) x >= 5  
T ☒ F f) x < 5

8. Use x = 5, to evaluate. Show all steps.

- (a)  $x \geq 2 \parallel x == 8$   
 $= \underline{5} \geq 2 \parallel \underline{5} == 8$   
 $= \underline{T} \parallel \underline{F}$   
 $= \underline{T}$
- (b)  $!(x \leq 9 \&\& x \neq 6)$   
 $= !( \underline{5} \leq 9 \&\& \underline{5} \neq 6 )$   
 $= !( \underline{T} \&\& \underline{T} )$   
 $= !( \underline{T} )$   
 $= \underline{F}$

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9. What is printed on the screen for each of the following values of n?

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```
onClick("enter", "click", function(event){
  var n = promptNum ("Value? ");
  if (n == 9)
    setText("result", "Leaf");
  else if (n >= 8)
    setText("result", "Cold");
  else if (n < 7)
    setText("result", "Fall");
  else
    setText("result", "Maple");
});
```

| Value of n? | Output |
|-------------|--------|
| 5           | Fall   |
| 6           | Fall   |
| 7           | Maple  |
| 8           | Cold   |
| 9           | Leaf   |
| 10          | Cold   |

10. Fill in the text variable in the memory diagram.

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var n = "4 Privet Drive";

|     |     |     |     |     |     |     |     |     |     |      |      |      |      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| [0] | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] | [10] | [11] | [12] | [13] |
| 4   |     | P   | r   | i   | v   | e   | t   |     | D   | r    | i    | v    | e    |

Based on the above variable, match the code to its output. Write the letter in the FIRST column.

|   |                |                                              |
|---|----------------|----------------------------------------------|
| b | 2              | a) setText("output", n.length);              |
| d | 4              | b) setText("output", n.indexOf ("P"));       |
| c | 5              | c) setText("output", n.indexOf ("v"));       |
| a | 14             | d) setText("output", n.charAt (0));          |
| i | e              | e) setText("output", n.toUpperCase ());      |
| k | Privet         | f) setText("output", n.toLowerCase ());      |
| j | Drive          | g) setText("output", n=="4 privet drive");   |
| f | 4 privet drive | h) setText("output", n<"zebra");             |
| e | 4 PRIVET DRIVE | i) setText("output", n.charAt (n.length-1)); |
| h | true           | j) setText("output", n.substring (9, 14));   |
| g | false          | k) setText("output", n.substring (2, 8));    |

11. Circle and correct 5 errors in this code.

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```
onEvent("button1", "click", function(event) {
  Var one = promptNum ("The first number: ");
  var two = promptNum "The second number: ";
  else if (one > two)
    setText("Answer", one + " is the largest") j
  else if (one == two) x
    setText("Answer", " The same value.");
  else
    set IMAGE ("Answer", two + " is the largest");
  Text
});
```

## Application ➡

12. Write the onEvent to classify the angle in label named "result".

Use a **promptNum** to ask for the angle size.

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| Classification Rule           | Classification |
|-------------------------------|----------------|
| Angle less than 90°           | Acute          |
| Angle is 90°                  | Right          |
| Angle is between 90° and 180° | Obtuse         |
| Angle is 180°                 | Straight       |
| Angle is over 180°            | Reflex         |

```
onEvent ("enter", "click", function(event) {
    var a = promptNum("Angle size?");
    if (a < 90)
        setText("result", "Acute");
    else if (a == 90)
        setText("result", "Right");
    else if (a < 180)
        setText("result", "Obtuse");
    else if (a == 180)
        setText("result", "Straight");
    else
        setText("result", "Reflex");
});
```

13. Fill in the memory diagram. Then, write the code to get each piece of output shown.

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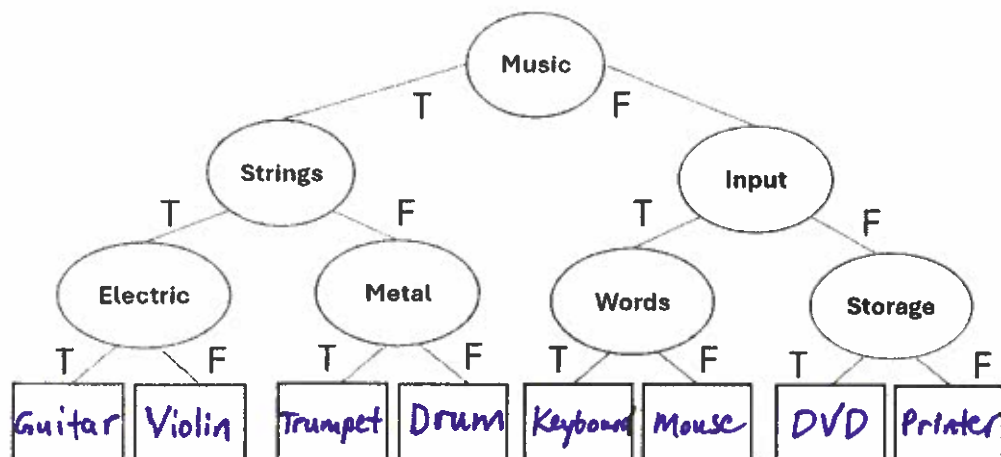
var h = "The Sorting Hat";

|     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| [0] | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] | [10] | [11] | [12] | [13] | [14] |
| T   | h   | e   |     | S   | o   | r   | t   | i   | n   | g    |      | H    | a    | t    |

|     |                     |                                        |
|-----|---------------------|----------------------------------------|
| (a) | The                 | setText("output", h.substring(0,3));   |
| (b) | Hat                 | setText("output", h.substring(12,15)); |
| (c) | 15 //the length     | setText("output", h.length);           |
| (d) | 4 //where s appears | setText("output", h.indexOf("S"));     |
| (e) | a                   | setText("output", h.charAt(13));       |
| (f) | THE SORTING HAT     | setText("output", h.toUpperCase());    |
| (g) | the sorting hat     | setText("output", h.toLowerCase());    |

14. Fill in the blanks to make the program to build the binary search tree.

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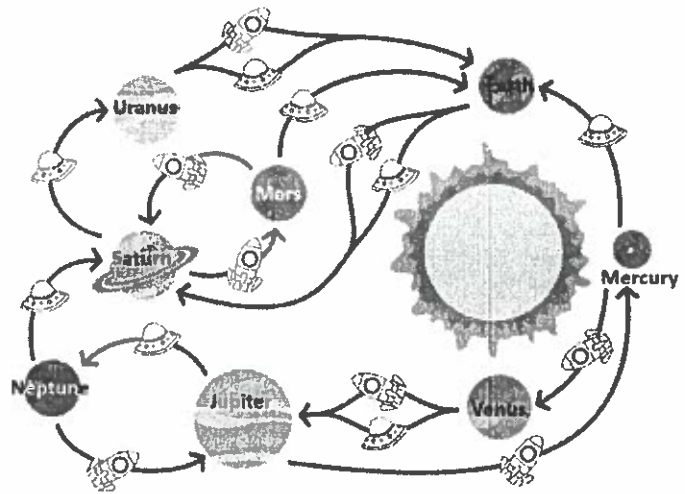


## Thinking

15. An astronaut's map is shown. It shows **all** the possible travel routes between planets. For each route, it shows whether it can be travelled by rocket  or by spaceship .

For example,   is a list of space vehicles that will take the astronaut Venus to Mars.

Suppose the astronaut wants to travel from Neptune to Earth. Which of the following is not a list of space vehicles that the astronaut could use? (circle)



- (a)    (b)     (c)    (d)    

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16. Using the above map, fill in method calls to navigate between planets. R is rocket () and S is spaceship ()

```
onEvent("start", "click", function() {
  Neptune();
});
function Jupiter() {
  var ans = prompt("R or S?");
  if (ans == "R") {
    Mercury ();
  } else {
    Neptune ();
  }
}
function Saturn() {
  var ans = prompt("R or S?");
  if (ans == "R") {
    Mars ();
  } else {
    Uranus ();
  }
}
function Mars() {
  var ans = prompt("R or S?");
  if (ans == "R") {
    Saturn ();
  } else {
    Earth ();
  }
}
```

```
function Mercury() {
  var ans = prompt("R or S?");
  if (ans == "R") {
    Venus ();
  } else {
    Earth ();
  }
}
function Neptune() {
  var ans = prompt("R or S?");
  if (ans == "R") {
    Jupiter ();
  } else {
    Saturn ();
  }
}
function Earth() {
  var ans = prompt("R or S?");
  Saturn ();
}
function Venus() {
  var ans = prompt("R or S?");
  Jupiter ();
}
function Uranus() {
  var ans = prompt("R or S?");
  Earth ();
}
```

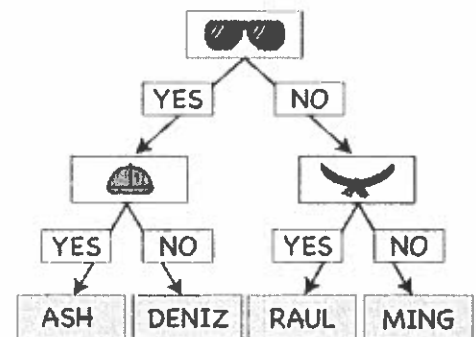
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17. Solve this Ken-Ken.

|    |    |   |
|----|----|---|
| 5+ | 2÷ |   |
| 3  | 2  | 1 |
| 2  | 3÷ | 3 |
|    | 1  |   |
| 2- |    | 2 |
| 1  | 3  | 2 |

18. Which set of pictures matches the binary tree on the right? (circle)

- (a)    
- (b)    
- (c)    



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